

REMARKS

In the Final Office Action, the Examiner rejects claims 1 and 5-7 under 35 U.S.C. § 103(a) as unpatentable over Smith et al. (U.S. Patent No. 6,700,868) in view of Gibson et al. (U.S. Patent No. 6,865,689), Parikh (U.S. Patent No. 4,551,836), and Wu et al. (U.S. Patent No. 6,496,481); rejects claim 9 under 35 U.S.C. § 103(a) as unpatentable over Smith et al. in view of Gibson et al., Parikh, and Wu et al., and further in view of Xu et al. (U.S. Patent No. 6,765,907); rejects claims 10, 12-20, and 23-26 under 35 U.S.C. § 103(a) as unpatentable over Smith et al. in view of Parikh, and Wu et al.; rejects claim 21 under 35 U.S.C. § 103(a) as unpatentable over Smith et al. in view of Parikh, and Wu et al. and further in view of Robinson (U.S. Patent No. 6,963,926); and rejects claim 22 under 35 U.S.C. § 103(a) as unpatentable over Smith et al. in view of Parikh, and Wu et al. and further in view of Goldband et al. (U.S. Patent No. 6,434,532).

By this Amendment, Applicant proposes amending claims 1, 6, 10, and 15-18 to improve form, and canceling claim 5 without prejudice or disclaimer. No new matter has been added. Support for the claims can be found throughout the originally filed specification, for example, at pp. 5-6, paragraph 20; and p. 7, paragraph 23.

Upon entry of this Amendment, claims 1, 6, 7, 9, 10, and 12-26 would be pending.

Claims 1, 6, and 7 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Smith et al. in view of Gibson et al., Parikh, and Wu et al. Applicant respectfully traverses the rejection.

Independent claim 1, as amended, is directed to an apparatus for forwarding packets. The apparatus comprises a plurality of inputs configured to receive respective incoming streams of data packets; a plurality of outputs configured to transmit respective outgoing streams of data packets; packet forwarding logic configured to form outgoing streams of data packets from the

data packets contained in the incoming streams, using destination address information contained in the data packets of the incoming streams; redundancy logic configured to transmit a first outgoing stream of data packets formed by the packet forwarding logic to a first output and a second output; a first service module to process data packets contained in the first outgoing stream; and a second service module to process data packets contained in the first outgoing stream, wherein each of the first and second service modules maintains identical state information based upon state information obtained from the data packets contained in the first outgoing stream, and wherein the redundancy logic designates one of the first service module or the second service module to be primary and the other to be secondary and causes the processed data packets to be discarded at the one of the first or second service modules that is secondary. Smith et al., Gibson et al., Parikh, and Wu et al., whether taken alone or in any reasonable combination, do not disclose or suggest this combination of features.

For example, Smith et al., Gibson et al., Parikh, and Wu et al., whether taken alone or in any reasonable combination, do not disclose or suggest redundancy logic that causes the processed data packets to be discarded at the one of the first or second service modules that is secondary. The Examiner asserts that tributary cards 12 and 13 (Fig. 1 and 2) of Smith et al. correspond to packet forwarding logic, and STS switching fabrics 21 and 22 (Fig. 1 and 2) of Smith et al. correspond to service modules (Final Office Action, pp. 2-3). The Examiner admits, however, that Smith et al. does not disclose or suggest the discarding of data packets. The Examiner nevertheless asserts that Gibson et al. discloses the discarding of data packets, citing col. 4, line 66 – col. 5, line 1, as support, and concludes that it would have been obvious to have modified the system of Smith et al. “by CRC coding the data.” (Final Office Action, pp. 3-4). Without addressing the merits of the Examiner’s conclusion, Applicant respectfully submits that

even if the system of Smith et al. could be modified by Gibson et al. in the manner suggested by the Examiner, the modified system would not disclose or suggest redundancy logic that causes data packets to be discarded at a secondary service module, as required by amended claim 1.

Assuming, for the sake of argument, that tributary cards 12, 13 correspond to packet forwarding logic and STS switching fabrics 21, 22 correspond to service modules (a point which Applicant does not concede), Smith et al. clearly discloses that data packets processed by STS switching fabrics 21 and 22 are received at both tributary cards 12, 13. Smith et al., at col. 5, lines 21-43, for example, describes a redundancy control method depicted in Fig. 3, in which the relay 14, 15 of the redundant tributary card 12, 13 is opened "in its transmit path to line 60 so as to cease transmitting to line 60," while the relay 14, 15 of the working tributary card 12, 13 is closed "to allow traffic to be transmitted through bridge 5 onto line 60." Thus, nowhere does Smith et al. disclose or suggest data packets processed at STS switching fabrics 21, 22 are discarded at the redundant one of them, and not sent to the redundant tributary card 12, 13, as would be required by amended claim 1.

The disclosures of Parikh, and Wu et al. do not cure the above deficiencies in the disclosures of Smith et al. and Gibson et al. For at least these reasons, Applicant respectfully submits that amended claim 1 is patentable over Smith et al., Gibson et al., Parikh, and Wu et al., whether taken alone or in any reasonable combination.

Claims 6 and 7 depend from claim 1 and thus are allowable for at least the reasons given with respect to claim 1.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 1, 6, and 7 based on the combination of Smith et al., Gibson et al., Parikh, and Wu et al.

Claim 9 stands rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Smith et al. in view of Gibson et al., Parikh, and Wu et al., and further in view of Xu et al. Applicant respectfully traverses the rejection.

Claim 9 depends from claim 1. The disclosures of Parikh, and Wu et al., and Xu et al. do not cure the above deficiencies in the disclosures of Smith et al. and Gibson et al. and thus claim 9 is allowable for at least the reasons given with respect to claim 1.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claim 9 based on Smith et al., Gibson et al., Parikh, Wu et al., and Xu et al.

Claims 10, 12-20, and 23-26 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Smith et al. in view of Parikh, and Wu et al. Applicant respectfully traverses the rejection.

Independent claim 10, as amended, is directed to a method of forwarding data packets. The method includes forming a first data stream from received data packets; transmitting the first data stream to both a first service module and a second service module, wherein identical state information is maintained in each of the first and second service modules based upon state information obtained from the transmitted first data stream; receiving an indication of whether the first service module has failed; if the indication indicates that the first service module has not failed, discarding, at the second service module, packets processed by the second service module; and if the indication indicates that the first service module has failed, discarding, at the first service module, packets processed by the first service module. Smith et al., Parikh, and Wu et al., whether taken alone or in any reasonable combination, do not disclose or suggest this combination of features.

For example, Smith et al., Parikh, and Wu et al., whether taken alone or in any reasonable combination, do not disclose or suggest that if the indication indicates that the first service module has not failed, discarding, at the second service module, packets processed by the second service module; and if the indication indicates that the first service module has failed, discarding, at the first service module, packets processed by the first service module, as required by amended claim 10. For at least reasons similar to those set forth above with respect to claim 1, nowhere does Smith et al. disclose or suggest the discarding of processed packets at either of STS switching fabrics 21, 22 (which the Examiner alleged were equivalent to the first and second service modules), as would be required by amended claim 10.

The disclosures of Parikh, and Wu et al. do not cure the above deficiencies in the disclosure of Smith et al. For at least these reasons, Applicant respectfully submits that amended claim 10 is patentable over Smith et al., Parikh, and Wu et al., whether taken alone, or in any reasonable combination.

Claims 12-14 depend from claim 10 and thus are allowable for at least the reasons given with respect to claim 10.

Independent claim 15, as amended, is directed to a controller including packet forwarding logic configured to forward a stream of packets to first and second service modules, each of the first and second service modules to obtain identical state information from the packets, the packet forwarding logic using destination address information within the packets to form the stream; selection logic configured to select one of the first or second service modules based on a status signal indicating whether the first service module has failed; and discard logic configured to discard packets processed by the first service module at the first service module if the status signal indicates that the first service module has failed and to discard packets processed by the

second service module at the second service module if the status signal indicates that the first service module has not failed. Smith et al., Parikh, and Wu et al., whether taken alone, or in any reasonable combination, do not disclose or suggest this combination of features.

For example, Smith et al., Parikh, and Wu et al., whether taken alone or in any reasonable combination, do not disclose or suggest discard logic configured to discard packets processed by the first service module at the first service module if the status signal indicates that the first service module has failed and to discard packets processed by the second service module at the second service module if the status signal indicates that the first service module has not failed, as required by amended claim 15. For at least reasons similar to those set forth above with respect to claims 1 and 10, nowhere does Smith et al. disclose or suggest the discarding of processed packets at either of STS switching fabrics 21, 22 which the Examiner alleged were equivalent to the first and second service modules), as would be required by amended claim 15.

The disclosures of Parikh, and Wu et al. do not cure the above deficiencies in the disclosure of Smith et al. For at least these reasons, Applicant respectfully submits that amended claim 15 is patentable over Smith et al., Parikh, and Wu et al., whether taken alone or in any reasonable combination.

Independent claim 16, as amended, is directed to an interface module usable in a system for forwarding packets. The interface module includes an ingress port for receiving an incoming stream of data packets; a switchover unit, wherein when a group of three or more forwarding planes are connectable to the interface module the switchover unit is configured to select two forwarding planes of the group; a transfer unit configured to transmit the data packets contained in the received incoming stream to each of two forwarding planes connectable to the interface module or the selected two forwarding planes, wherein identical state information is maintained

in the two forwarding planes or the selected two forwarding planes based upon state information obtained from the transmitted data packets; and an egress port for transmitting an outgoing stream of data packets, wherein the switchover unit is configured to select one of the two forwarding planes or the selected two forwarding planes and to form the outgoing stream of data packets from data packets received from the selected forwarding plane. Smith et al., Parikh, and Wu et al., whether taken alone or in any reasonable combination, do not disclose or suggest this combination of features.

For example, Smith et al., Parikh, and Wu et al., whether taken alone or in any reasonable combination, do not disclose or suggest a switchover unit, wherein when a group of three or more forwarding planes are connectable to the interface module the switchover unit is configured to select two forwarding planes of the group; and a transfer unit configured to transmit the data packets contained in the received incoming stream to each of two forwarding planes connectable to the interface module or the selected two forwarding planes, wherein identical state information is maintained in the two forwarding planes or the selected two forwarding planes based upon state information obtained from the transmitted data packets, and wherein the switchover unit is configured to select one of the two forwarding planes or the selected two forwarding planes and to form the outgoing stream of data packets from data packets received from the selected forwarding plane, as required by amended claim 16. The Examiner asserts that Smith et al., at col. 3, lines 31-41, discloses similar features. Applicant respectfully disagrees.

Smith et al., at col. 3, lines 31-41, discloses:

STS switching fabrics 21 and 22 both receive processed traffic from tributary cards 12 and 13 and are capable of switching STS-n level signals. In a redundant mode, one of STS switching fabrics 21 and 22 is designated working (STS switching fabric 21 for instance) and the other is designated redundant (STS switching fabric 22 for instance). Although STS switching fabrics, 21 and 22 receive processed traffic from both tributary cards 12 and 13, they only select

traffic from the working tributary card (in this case, tributary card 12) for further transmission.

Apparently, the Examiner asserts that tributary cards 12, 13 correspond to an interface module and STS switching fabrics 21, 22 correspond to forwarding planes (a point which Applicant does not concede). However, this section of Smith et al. merely discloses the designation of one of STS switching fabrics 21 and 22 as “working,” and the other as “redundant,” both of which receive processed traffic from tributary cards 12, 13. Thus, nowhere in this section or elsewhere does Smith et al. disclose or suggest a switchover unit to select two STS switching fabrics 21, 22 from among a group of three or more STS switching fabrics 21, 22, and a transfer unit to transmit the data packets contained in the received incoming stream to each of two STS switching fabrics 21, 22 connectable to the interface module or the selected two STS switching fabrics 21, 22, as would be required by amended claim 16.

The disclosures of Parikh, and Wu et al. do not cure the above deficiencies in the disclosure of Smith et al. For at least these reasons, Applicant respectfully submits that amended claim 16 is patentable over Smith et al., Parikh, and Wu et al., whether taken alone or in any reasonable combination.

Claim 17 depends from claim 16 and thus is allowable for at least the reasons given with respect to claim 16.

Independent claim 18, as amended, is directed to a system for forwarding packets. The system includes a set of forwarding planes that includes first and second forwarding planes configured to receive packets from a plurality of interface modules and transmit received packets to a plurality of interface modules; a controller to designate the first and second forwarding planes when the set includes three or more forwarding planes, wherein the first and

second forwarding planes maintain identical state information based upon state information obtained from the received packets; and a first interface module coupled to the first and second forwarding planes, the first interface module receiving packets contained in an incoming stream at an ingress port and transmitting the packets to the first forwarding plane and the second forwarding plane, the first interface module further receiving data packets from each of the first and second forwarding planes and transmitting at an egress port data packets from a selected one of the first and second forwarding planes. Smith et al., Parikh, and Wu et al., whether taken alone or in any reasonable combination, do not disclose or suggest this combination of features.

For example, Smith et al., Parikh, and Wu et al., whether taken alone or in any reasonable combination, do not disclose or suggest a set of forwarding planes that includes first and second forwarding planes and a controller to designate the first and second forwarding planes when the set includes three or more forwarding planes, as required by amended claim 18.

For reasons similar to the reasons given above with respect to claim 16, nowhere does Smith et al. disclose or suggest a set of STS switching fabrics that includes first and second STS switching fabrics 21, 22, and a controller to designate the first and second STS switching fabrics 21, 22 when the set includes three or more STS switching fabrics 21, 22, as would be required by amended claim 18.

The disclosures of Parikh, and Wu et al. do not cure the above deficiencies in the disclosure of Smith et al. For at least these reasons, Applicant respectfully submits that amended claim 18 is patentable over Smith et al., Parikh, and Wu et al., whether taken alone or in any reasonable combination.

Claims 19, 20, and 23, 25, and 26 variously depend from claims 15 and 18 and thus are patentable over Smith et al., Parikh, and Wu et al., whether taken alone or in any reasonable combination, for at least the reasons given above with respect to their respective base claims.

Claim 24 depends from claim 1, and is thus directed to an apparatus for forwarding packets that includes, among other things, redundancy logic that designates one of the first service module or the second service module to be primary and the other to be secondary and causes the processed data packets to be discarded at the one of the first or second service modules that is secondary. As noted above, the Examiner admits that Smith et al. does not disclose the discarding of data packets, and does not allege that either Parikh, or Wu et al. discloses or suggests this feature. Thus, the Examiner has not established a prima facie case of obviousness under 35 U.S.C. § 103 based on the combination of Smith et al., Parikh, and Wu et al. with respect to claim 24.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 10, 12-20, and 23-26 under 35 U.S.C. § 103(a) based on the combination of Smith et al., Parikh, and Wu et al.

Claim 21 stands rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Smith et al. in view of Parikh, and Wu et al. and further in view of Robinson. Applicant respectfully traverses the rejection.

Claim 21 depends from claim 18. The disclosure of Robinson does not cure the deficiencies of the disclosures of Smith et al., Parikh, and Wu et al. set forth above with respect to claim 18, and thus claim 21 is patentable over Smith et al., Parikh, Wu et al., and Robinson whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 18.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claim 21 under 35 U.S.C. § 103(a) based on the combination of Smith et al., Parikh, Wu et al., and Robinson.

Claim 22 stands rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Smith et al. in view of Parikh, and Wu et al. and further in view of Goldband et al. Applicant respectfully traverses the rejection.

Claim 22 depends from claim 18. The disclosure of Goldband et al. does not cure the deficiencies of the disclosures of Smith et al., Parikh, and Wu et al. set forth above with respect to claim 18, and thus claim 22 is patentable over Smith et al., Parikh, Wu et al., and Goldband et al. whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 18.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claim 22 under 35 U.S.C. § 103(a) based on the combination of Smith et al., Parikh, Wu et al., and Goldband et al.

Applicant respectfully requests that this Amendment under 37 C.F.R. § 1.116 be entered by the Examiner, placing claims 1, 6, 7, 9, 10, and 12-26 in condition for allowance.

Applicant submits that the entry of this Amendment would place the application in better form for appeal, should the Examiner dispute the patentability of the pending claims.

In view of the foregoing remarks, Applicant submits that the claimed invention, as amended, is neither anticipated nor rendered obvious in view of the prior art references cited against this application. Applicant therefore requests the entry of this Amendment, the Examiner's reconsideration and reexamination of the application, and the timely allowance of the pending claims.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1070 and please credit any excess fees to such deposit account.

Respectfully submitted,

HARRITY & SNYDER, L.L.P.

By: Garth D. Richmond
Garth D. Richmond
Reg. No. 43,044

11350 Random Hills Road
Suite 600
Fairfax, Virginia 22030
(571) 432-0800
Customer Number: 44987
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